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IS 14838 (2000): Laboratoryware - Plastics Wash Bottles
[CHD 10: Glassware]

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# प्रयोगशाला सामान — प्लास्टिक धवन बोतलें — विशिष्टि

*Indian Standard*

# LABORATORYWARE — PLASTICS WASH BOTTLES — SPECIFICATION

ICS 71.040.20

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**BUREAU OF INDIAN STANDARDS**
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

*August* 2000 **Price Group 3**

Laboratoryware and Related Apparatus Sectional Committee, CHD 11

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Laboratoryware and Related Apparatus Sectional Committee had been approved by the Chemical Division Council.

Wash bottles are items of daily use in laboratory. At present, because of flexibility and lack of breakage, plastic wash bottles are rapidly replacing glass wash bottles.

The wash bottles specified in this standard are intended for use with dilute aqueous solutions up to 60°C. Before using these wash bottles for strong acids, alkalis, oxidizing agents, organic solvents or non-aqueous solutions or at temperatures beyond the given range, users should satisfy themselves, either by laboratory tests or by reference to the manufacturer or supplier that the wash bottles are suitable for such applications.

There is currently a great variety of design of plastics wash bottles but no particular methods of construction are specified in this standard. The wash bottles are, however, required to possess a minimum stability when standing on the bench and are required to be so constructed that both unintentional ejection of the contents during manipulation and leakage from the filler cap are minimized.

The force required to eject a convenient stream of liquid from a plastics wash bottle depends, *inter alia*, on the shape, size, wall thickness and its material of construction. It has not been found possible to specify limits for this force without restricting the design, and in view of the range of personal preference on the part of the user, no such requirements have been included in the specification. Nevertheless, the flexibility of the wash bottle should be such that undue fatigue is not caused in normal use.

In formulating this standard considerable assistance has been drawn from BS 5404 (Part 4) : 1979 'Plastics laboratoryware Part 4 : Wash bottles'. There was no ISO standard on the subject at the time of preparation of this standard.

The composition of the technical committee responsible for the formulation of this standard is given in Annex **B**.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# LABORATORYWARE — PLASTICS WASH BOTTLES — SPECIFICATION

## 1 SCOPE

This standard specifies requirements and methods of sampling and test for flexible (squeeze type) plastics wash bottles for general laboratory use for dilute aqueous solutions up to 60°C.

## 2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

| *IS No.* | *Title* |
|---|---|
| 1070 : 1992 | Reagent grade water (*third revision*) |
| 1382 : 1981 | Glossary of terms relating to glass and glassware (*first revision*) |
| 3025 (Part 14) : 1989 | Methods of sampling and test (physical and chemical) : Part 14 Specific conductance (wheatstone bridge, conductance cell) (*first revision*) |
| 4426 : 1992 | Methods for sampling laboratory glassware (*first revision*) |
| 7511 (Part 1) : 1992 | Dimensions for neck finishes : Part 1 Shallow continuous thread finish ($R_3$) (*second revision*) |

## 3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1382 shall apply.

## 4 REQUIREMENTS

### 4.1 Capacity

**4.1.1** The working capacity, which shall not exceed 80 percent of the brimfull capacity, shall be more than 175 ml but not exceeding 475 ml.

**4.1.2** The working capacity may be suitably marked on the wash bottle by means of a horizontal line, together with the words 'fill line' or other suitable wording.

NOTE—This line is intended to indicate the manufacturer's recommended maximum level of the contents.

### 4.2 Materials for Container, Cap and Dispensing Tube

**4.2.1** *General*

Wash bottles shall be constructed of plastic materials of suitable chemical and physical properties and shall be as free as possible from moulding defects and stress.

**4.2.2** *Translucency*

The wash bottles shall be constructed in such a manner that, when containing transparent liquids, the meniscus can be seen through the container wall. The cap may be coloured and/or opaque.

**4.2.3** *Resistance to Extraction of Ionic Material by Water at 27°C*

**4.2.3.1** When tested according to the procedure given in Annex A, the wash bottle shall give an aqueous extract free of suspended matter and shall comply with the requirements of **4.2.3.2** or **4.2.3.3** as applicable.

**4.2.3.2** For wash bottles having a working capacity of 325 ml or more, the increase in electrical conductivity of the extract from that of the original water used for extraction shall not be more than 200 µ S/m.

NOTE — 200 µ S/m is equivalent to the conductivity of water containing approximately one part per million of sodium chloride.

**4.2.3.3** For wash bottles having a working capacity less than 325 ml, the increase in electrical conductivity of the extract from that of the original water used for the extraction shall not be more than 250 µ S/m.

### 4.3 Details of Construction

**4.3.1** *Cap*

**4.3.1.1** The cap shall either bear a screw thread (preferably complying with the requirements of IS 7511 (Part 1) or shall be of the 'snap-on' type, and shall not be dislodged when the wash bottle, filled to the working capacity, is squeezed.

**4.3.1.2** The cap may provide support for the dispensing tube.

**4.3.2** *Dispensing Tube*

**4.3.2.1** The end of the dispensing tube, which may be either integral with the container or supported by the cap or container, shall reach to within 7 mm of the base and shall not be self-sealing.

**4.3.2.2** The nozzle may be integral with or separate from the dispensing tube. If the nozzle is detachable from the dispensing tube, it shall be so fixed that the nozzle is not dislodged when the wash bottle, filled to the working capacity, is squeezed.

**4.3.2.3** The nozzle shall be internally tapered to an internal diameter, at the outlet, of between 0.5 mm and 1.0 mm.

NOTE — It is envisaged that users requiring a larger orifice will cut back the nozzle as required.

**4.3.3** *Container*

**4.3.3.1** The wall thickness of the container shall be not less than 0.5 mm at any point.

**4.3.3.2** The internal diameter of the neck shall be not less than 19 mm.

**4.3.3.3** The base shall enable the wash bottle to stand vertically on a plane horizontal surface without any tendency to spin or rock.

### 4.4 Leakage

When filled with water to the fill-line (if marked) or filled to 80 percent of the brimfull capacity, and with the nozzle sealed, the leakage when the wash bottle is inverted for two minutes shall not exceed one detached drop.

### 4.5 Stability

When filled with water to the fill-line (if marked) or filled to 80 percent of the brimfull capacity, the wash bottle, irrespective of its orientation, shall remain standing on a non-slip plane surface that slopes at 12 ± 1 °C to the horizontal.

### 4.6 Flexibility

When the wash bottle is filled with water to the fill-line (if marked) or is filled to 80 percent of the brimfull capacity and picked up from the bench with a finger and thumb at the half-full level, water shall not be expelled through the nozzle. In the case of wash bottles having a non-circular cross-section the finger and thumb shall contact the most flexible points of the container, at the half-full level, during this test.

## 5 PACKING AND MARKING

### 5.1 Packing

The bottles shall be packed as agreed to between the purchaser and the supplier.

### 5.2 Marking

The following inscriptions shall be legibly and indelibly marked on the wash bottle:

a) Indication of the source of manufacture,
b) Month and year of manufacture,
c) Capacity in ml, and
d) A horizontal line indicating working capacity.

**5.2.1** *BIS Certification Marking*

The bottles may also be marked with the Standard Mark.

**5.2.1.1** The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 6 SAMPLING AND CRITERIA OF CONFORMITY

**6.1** Representative samples of wash bottles shall be drawn and adjudged for conformity to this standard as prescribed in IS 4426.

**6.1.1** Regarding wall thickness, internal diameter, flexibility, and test for ionic material extracted by water at 27°C, three samples from the lot shall be tested and all the three samples shall satisfy these requirements.

# ANNEX A

(*Clause* 4.2.3.1)

## TEST FOR IONIC MATERIAL EXTRACTED BY WATER AT 27°C

### A-1 APPARATUS AND REAGENTS

### A-1.1 Conductivity Meter

Suitable for measurement of the electrical conductivity of water.

### A-1.2 Deionized Water

Complying with the requirements of IS 1070 except that the conductivity shall be less than 200 µ S/m when measured by the procedure detailed in IS 3025 (Part 14).

### A-1.3 Detergent Solution

Having a concentration of approximately one percent (*v/v*).

### A-2 PROCEDURE

Thoroughly wash the wash bottle, dispensing tube and cap with hot water and detergent solution; then rinse well with hot water (temperature not exceeding 60°C), followed by cold water and finally with liberal quantities of deionized water. Fill the wash bottle to the fill-line (if marked) or to 80 percent of the brimfull capacity, with deionized water at 27± 2°C, replace the cap and dispensing tube and allow them to stand in an inverted position for three hours at the same temperature.

Examine the extract for the presence of any suspended matter for compliance with the requirement specified in **4.2.3.1**. Then measure the electrical conductivity of the extract by the procedure detailed in **6** of IS 3025 (Part 14) and deduct the conductivity value measured at 27°C for the deionized water used to prepare the extract. Note the difference in conductivity in microsiemens per metre.

# ANNEX B

## (*Foreword*)

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